

# Claims

1. A composition for catalyst preparation comprising:

- 1) a composite metal oxide as a catalytic active component; and
- 5        2) a catalyst additive selected from sublimable materials.

2. The composition of Claim 1, which comprises:

- 1) a catalytic component represented by the following
- 10    formula 1; and
- 2) a catalyst additive selected from sublimable materials:

[Formula 1]



15        wherein Mo is molybdenum;

Bi is bismuth;

A is an iron element;

B is at least one element selected from the group consisting of Co and Ni;

20        C is at least one element selected from the group consisting of W, Si, Al, Zr, Ti, Cr, Ag and Sn;

D is at least one element selected from the group consisting of P, Te, As, B, Sb, Ce, Nb, Pb, Mn, Zn and Nb;

25        E is at least one element selected from the group consisting of Na, K, Li, Rb, Cs, Ta, Ca and Mg;

a, b, c, d, e, f and g represent the atomic ratio of the respective elements, and

when a is 12, b is then 0.01-10, c is 0.01-10, d is 0.01-10, e is 0.01-10, f is 0.01-20 and g is 0.01-10, and h is a numeral value depending on the oxidation state of each

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of the elements.

3. The composition of Claim 1 or 2, wherein the catalyst additive is at least one selected from the group  
5 consisting of urea ( $\text{NH}_2\text{CONH}_2$ ), melamine ( $\text{C}_3\text{H}_6\text{N}_6$ ), ammonium oxalate ( $\text{C}_2\text{H}_8\text{N}_2\text{O}_4$ ), methyl oxalate ( $\text{C}_4\text{H}_6\text{O}_4$ ) and naphthalene ( $\text{C}_{10}\text{H}_8$ ).

4. The composition of Claim 1 or 2, wherein the  
10 catalyst additive is in the form of a granular powder with a size of 0.01-10  $\mu\text{m}$  or a liquid.

5. The composition of Claim 1, wherein the catalyst additive is added at the amount of 0.1-30% by weight to the  
15 weight of the catalytic active component of formula 1.

6. A method for preparing a catalyst containing a composite metal oxide as a catalytic active component, the method comprising the steps of:

- 20 a) preping a catalyst suspension containing salt of each metal components of the composite metal oxide for the catalytic active component;
- b) drying the catalyst suspension and then crushing the dried material to prepare a catalyst powder;
- 25 c) mixing the catalyst powder with a catalyst additive selected from sublimable materials; and
- d) calcining the mixture from the step c).

7. The method of Claim 6, which comprises the steps of:

a) preparing a catalyst suspension containing a catalytic active component represented by the following formula 1;

b) drying the catalyst suspension and then crushing the dried material into a catalyst powder with a particle size of less than 150;

c) mixing the crushed catalyst powder with a catalyst additive selected from sublimable materials; and

d) calcining the mixture from the step c) at a temperature of 400-500 °C under an air atmosphere for at least 5 hours:

[Formula 1]



wherein Mo is molybdenum;

Bi is bismuth; A is an iron element;

B is at least one element selected from the group consisting of Co and Ni;

C is at least one element selected from the group consisting of W, Si, Al, Zr, Ti, Cr, Ag and Sn;

D is at least one element selected from the group consisting of P, Te, As, B, Sb, Ce, Nb, Pb, Mn, Zn and Nb;

E is at least one element selected from the group consisting of Na, K, Li, Rb, Cs, Ta, Ca and Mg;

a, b, c, d, e, f and g represent the atomic ratio of the respective elements, and

when a is 12, b is then 0.01-10, c is 0.01-10, d is 0.01-10, e is 0.01-10, f is 0.01-20 and g is 0.01-10, and h is a numeral value depending on the oxidation state of each of the elements.

8. The method of Claim 6 or 7, wherein the catalyst additive is at least one selected from the group consisting of urea ( $\text{NH}_2\text{CONH}_2$ ), melamine ( $\text{C}_3\text{H}_6\text{N}_6$ ), ammonium oxalate ( $\text{C}_2\text{H}_8\text{N}_2\text{O}_4$ ), methyl oxalate ( $\text{C}_4\text{H}_6\text{O}_4$ ) and naphthalene ( $\text{C}_{10}\text{H}_8$ ).

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9. The method of Claim 7, which further comprises, between the steps b) and c), a step of calcining the crushed catalyst powder at a temperature of 180-250 °C for 3-5 hours under an oxygen atmosphere.

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10. The method of Claim 6 or 7, wherein the catalyst additive is in the form of a granular powder with a size of 0.01-10  $\mu\text{m}$  or a liquid.

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11. The method of Claim 7, wherein the catalyst additive is added at the amount of 0.1-30% by weight to the weight of the catalytic active component of formula 1.

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12. A catalyst having fine pores formed by removing the catalyst additive from the composition for catalyst preparation according to any one of Claims 1 to 5 by a calcining process.